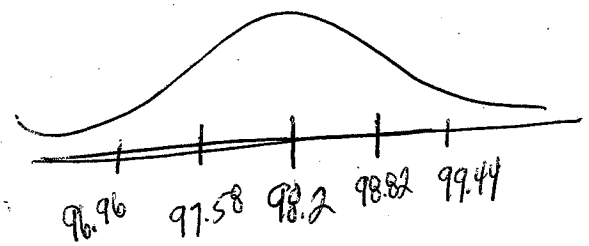
Final Review Problem #2

Work/Answers

Assume that human body temperatures are normally distributed with a mean of 98.2°F and a standard deviation of 0.62°F. Draw a picture of the situation so that you can make sure that your answers make sense.

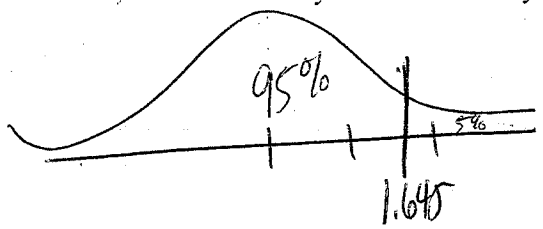


1.) Julie's mom finds her in bed on Monday morning claiming that she is sick so her mother takes her temperature. The thermometer says that Julie has a temperature of 98.8°F. What percentage of healthy people have a temperature below Julie's? Should Julie be allowed to stay home from school?

$$z = \frac{98.8 - 98.2}{.62} = .9677 \text{ (z score)} \qquad .8340$$

83.4% have a temperature below Julie

2.) Physicians want to select a minimum temperature for requiring further medical tests. What should that temperature be, if we want only 5.0% of healthy people to exceed it?



$$1.645 = \frac{X - 98.2}{.62} = 99.2199$$

temp of 99.2

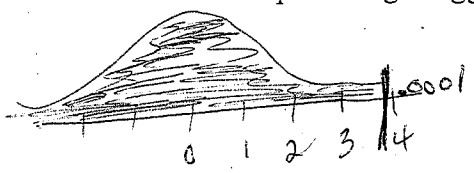
3.) Bellevue Hospital in New York City uses 100.6°F as the lowest temperature considered to be a fever. What percentage of normal and healthy persons would be considered to have a fever? Does this percentage suggest that a cutoff of 100.6°F is appropriate?

$\mu = 98.2$

$\sigma = .62$

$X = 100.6$

$$z = \frac{100.6 - 98.2}{.62} = 3.87$$

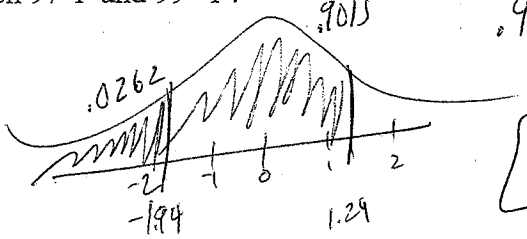


no this is NOT appropriate → no one would have a fever! .9999

4.) What percentage of healthy people have a temperature between 97°F and 99° F?

$$\frac{97 - 98.2}{.62} = -1.94 \qquad \frac{99 - 98.2}{.62} = 1.29$$

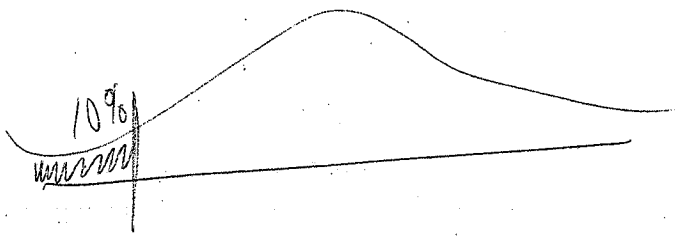
(-1.935483871) (1.290322581)



.9015 - .0262

.8753

5.) Dr. Jones claims that anyone with a body temperature in the lowest 10% of healthy people should have an extra health test in the hospital upon their visit. What is a persons body temperature if they have to have this test?



$$-1.28 = \frac{X - 98.2}{.62}$$

below

$97.4 = X$